

What is Claimed Is:

1. A method for manufacturing a split probe by channel processing a probe tip on a microcantilever, comprising the steps of:

tilting the microcantilever around an axis;

scanning and irradiating the probe tip of the tilted microcantilever with a focused ion beam to obtain a SIM image;

deciding a central position for the probe tip from the acquired SIM image; and

forming a split section by scanning and irradiating the decided central position using a focused ion beam so as to form a first channel.

2. The method for manufacturing a split probe according to claim 1, the first channel is also formed for the opposite side of the probe which is oriented to the focused ion beam after being rotated 180 degrees around an axis vertical to the microcantilever.

3. The method for manufacturing a split probe according to claim 1, wherein conductivity of the divided probe terminal is cut by forming a second channel connecting to the first channel at a conductive portion covering the cantilever either after or before processing of the probe tip.

4. The method for manufacturing a split probe according to claim 3, wherein focused ion beam processing current at the time of forming the second channel is larger than focused ion beam processing current for forming the first channel.

5. The method for manufacturing a split probe according to claim 3, wherein a width of the second channel is broader than that of the channel.

6. The method of manufacturing a split probe according to claim

3, wherein processing depth during processing of the first and second channels is of an extent that does not pass through an insulation film at a lower part of a conductive film.

7. The method of manufacturing a split probe according to claim 1, wherein processing of the probe tip is carried out by changing tilt angle of the entire microcantilever a plurality of times.

8. A method for manufacturing a split probe by channel processing a probe tip on a microcantilever, comprising:

- a first step of deciding a central position and a processing position of a probe tip using an SIM image obtained by irradiating and scanning only the very tip of the probe of the microcantilever with a focused ion beam current with the whole of the microcantilever in a tilted state;

- a second step of channel processing the probe tip with the whole of the cantilever tilted; and

- a third step of returning the whole of the cantilever to a horizontal position and channel processing the probe tip.

9. A method for manufacturing a split probe by channel processing a probe tip on a microcantilever, comprising:

- a first step of deciding a central position and a processing position of a probe tip using an SIM image obtained by irradiating and scanning only the very tip of the probe of the microcantilever with a focused ion beam current of 10pA or less with the whole of the microcantilever in a tilted state;

- a second step of carrying out first channel processing of the probe tip using a focused ion beam current of 10pA or less with the whole of the cantilever tilted; and

- a third step of returning the whole of the cantilever to a horizontal position, switching over to a larger focused ion beam current than the focused ion beam current used in the

first and second steps, and performing processing for a second channel connecting with the first channel by cutting a conductive film spanning from the probe base to the base of the cantilever.